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IS 12527 (1988): General requirements for riders for buckets used in shaft sinking operations in mines [MED 8: Mining Techniques and Equipment]

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“Knowledge is such a treasure which cannot be stolen”



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Indian Standard

GENERAL REQUIREMENTS FOR RIDERS FOR BUCKETS USED IN SHAFT SINKING OPERATIONS IN MINES

1. Scope — Lays down requirements for one of the type of riders for buckets used in shaft sinking operations in mines.

2. Nomenclature — Shall be as for col 1 and 2 of Table 1 read with Fig. in Table 2.

TABLE 1 COMPONENTS
(*Clauses 2, 4, 5.2, 6 and 7.1*)

Number in Fig. in Table 2	Nomenclature	Quantity	Reference for Dimensions	Recommended Material
(1)	(2)	(3)	(4)	(5)
1	Cross tie	4	Table 3	IS : 226-1975 'Specification for structural steel (standard quality)' / Grade A of IS : 2062-1984 'Specification for weldable structural steel (third revision)'
2	Longitudinal tie	4	Table 4	IS : 226-1975/Grade A of IS : 2062-1984
3	Gusset plate	2	Table 5	IS : 226-1975/Grade A of IS : 2062-1984
4	Guide fork	4	Fig. 1	IS : 1875-1978 'Specification for carbon steel billets, blooms, slabs and bars for forgings (fourth revision)'
5	Splint plate	4	Fig. 2	IS : 1875-1978
6	Filler	4	Fig. 3	IS : 226-1975/Grade A of IS : 2062-1984
7	Shim	8	Fig. 4	IS : 226-1975/Grade A of IS : 2062-1984
8	Lock plate	8	Fig. 5	IS : 226-1975/Grade A of IS : 2062-1984
9	Liner shell	4	Table 6 or 7	IS : 1875-1978
10	Hexagonal head screw	16	—	—
11	Spring washer	16	—	—
12	U-piece	16	—	—
13	Hexagonal head screws	16	—	—
14	Hexagonal head screws	16	—	—
15	Spring washers	24	—	—
16	Snap head rivets	12 to 22	—	—

3. Forms — There shall be two forms, A and B, as shown in Fig. in Table 2.

4. Quantity of Components — Quantity in number of components required are given in col 3 of Table 1.

4.1 For cross tie, longitudinal tie, gusset plate and guide fork, the guide rope spacing, for liner shell for Form A flat rope size in mm and for liner shell for Form B round rope size in mm required by the purchaser, may be specified.

5. Dimensions

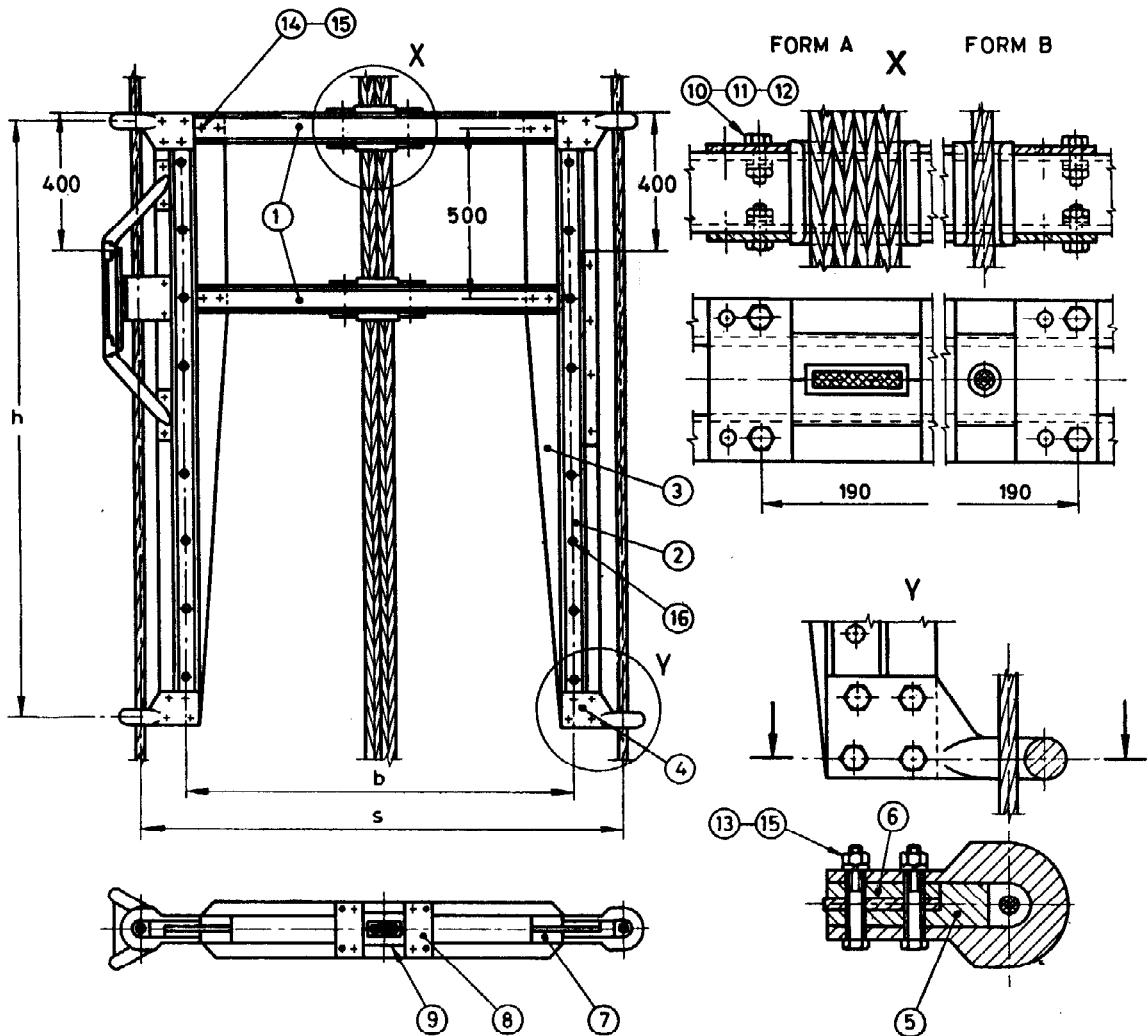
5.1 Main Dimensions — Shall be as specified in Table 2.

5.2 Dimensions of Components — Shall be as given in Tables 3 to 7 and Fig. 1 to 5 (see col 4 of Table 1).

5.2.1 It is recommended that for cross tie channel section MC 100 or MCP 100, and for longitudinal tie channel section MC 75 or MCP 75 in accordance with IS : 808 (Part 3)-1979 'Dimensions for hot-rolled steel sections: Part 3 Channel, MC and MCP series (second revision)', may be used.

TABLE 2 MAIN DIMENSIONS FOR RIDERS FOR SHAFT SINKING BUCKETS
(Clause 5.1)

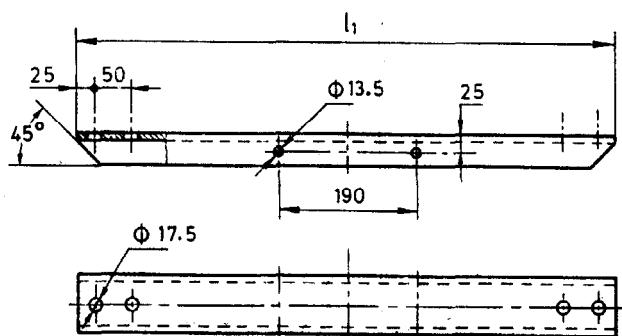
All dimensions in millimetres.



<i>s</i>	<i>b</i>	<i>h</i>	Mass *kg ≈
1 100 1 200 1 300	800 900 1 000	1 300 1 400 1 500	129 136 143
1 400 1 500 1 600	1 100 1 200 1 300	1 650 1 750 1 850	151 158 165
1 700 1 800 1 900 2 000	1 400 1 500 1 600 1 700	2 000 2 100 2 200 2 300	173 180 188 195

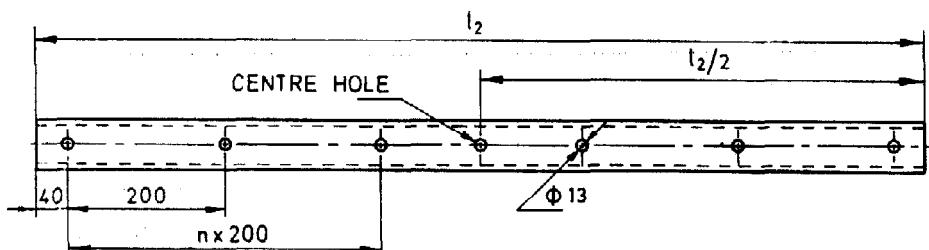
*Without liner shell halves, magnet and holder and also without counter weight.

TABLE 3 DIMENSIONS FOR CROSS TIE
(Clause 5.2)
 All dimensions in millimetres.



<i>s</i>	<i>t</i> ₁
1 100	735
1 200	835
1 300	935
1 400	1 035
1 500	1 135
1 600	1 235
1 700	1 335
1 800	1 435
1 900	1 535
2 000	1 635

TABLE 4 DIMENSIONS FOR LONGITUDINAL TIE
(Clause 5.2)
 All dimensions in millimetres.

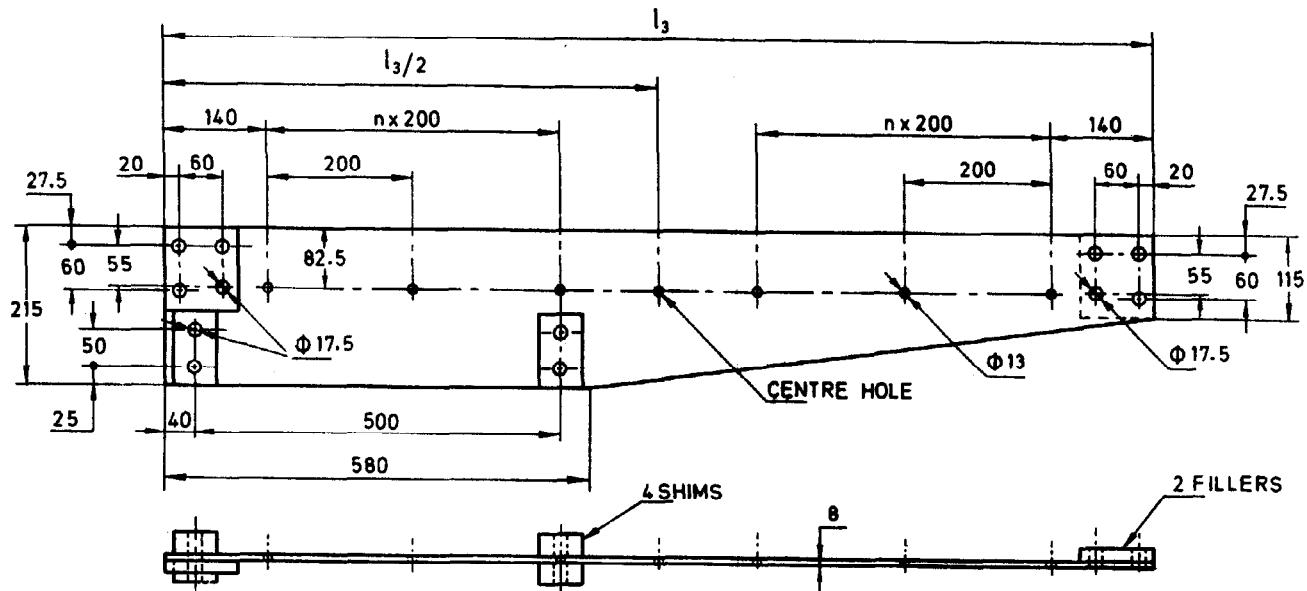


<i>s</i>	<i>t</i> ₂	<i>n</i>
1 100	1 140	2
1 200	1 240	2
1 300	1 340	2
1 400	1 490	3
1 500	1 590	3
1 600	1 690	3
1 700	1 840	4
1 800	1 940	4
1 900	2 040	4
2 000	2 140	4

Note — The centre hole is omitted in case of longitudinal ties for *s* = 1 100, 1 400, 1 500, 1 700 and 1 800 mm.

TABLE 5 DIMENSIONS FOR GUSSET PLATE
(Clause 5.2)

All dimensions in millimetres.

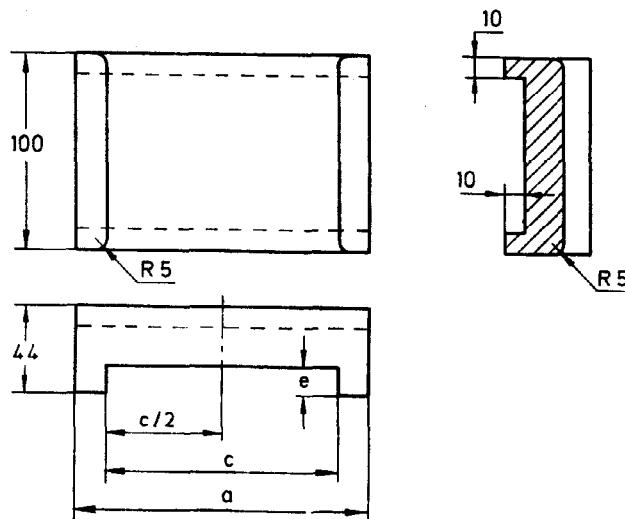


s	I_s	n	Mass kg =
1 100	1 340	2	15.6
1 200	1 440	2	16.6
1 300	1 540	2	17.6
1 400	1 690	3	19.2
1 500	1 790	3	20.2
1 600	1 890	3	21.3
1 700	2 040	4	22.4
1 800	2 140	4	23.8
1 900	2 240	4	24.8
2 000	2 340	4	25.9

Note— The centre hole is omitted in case of longitudinal gusset plates for $s = 1\ 100, 1\ 400, 1\ 500, 1\ 700$ and $1\ 800$ mm.

TABLE 6 DIMENSIONS FOR LINER SHELL (FOR FLAT ROPE)
(Clause 5.2)

All dimensions in millimetres.



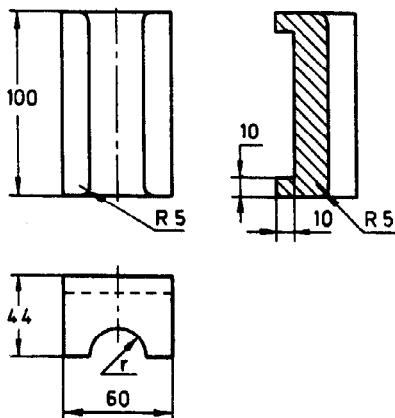
For Flat Wire Rope of Size $b \times t$	a	c	e	Mass kg \approx
60×12	130	70	11	3.3
70×10	130	80	10	3.3
80×12	130	90	11	3.1
92×15	130	102	12.5	2.9
98×16	130	108	13	2.8
104×17	150	114	13.5	3.3
110×18	150	120	14	3.2
116×19	150	126	14.5	3.0
122×20	150	132	15	2.9

Note — If flat wire rope of width b and thicknesses t other than those given above are used, the dimensions c and e shall be obtained with the following formulae:

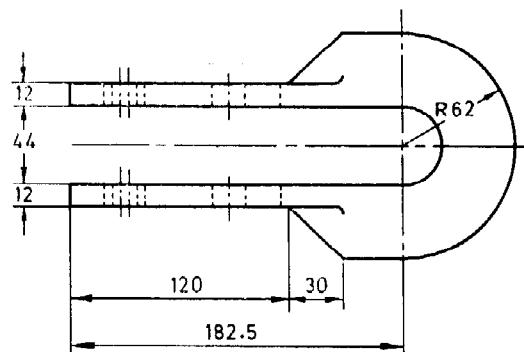
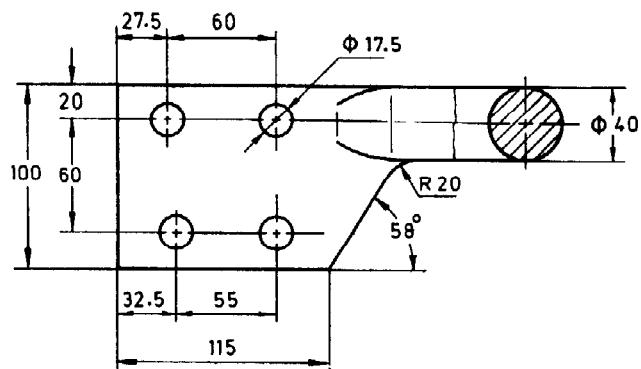
$$c = b + 10 \quad e = \frac{t + 10}{2}$$

TABLE 7 DIMENSIONS FOR LINER SHELL (FOR ROUND ROPE)
(Clause 5.2)

All dimensions in millimetres.

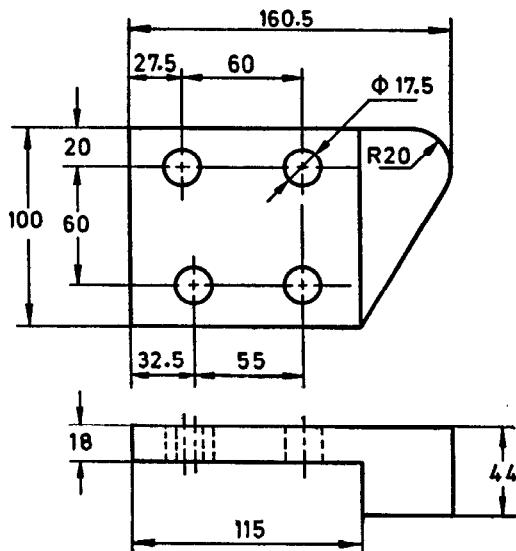


For Round Rope of Nominal Size	<i>r</i>	Mass kg ≈
20	15	1.54
22	16	1.5
24	17	1.45
26	18	1.4
28	19	1.38
30	20	1.31



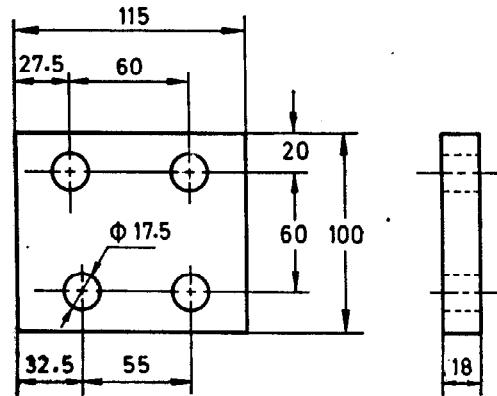
All dimensions in millimetres.

FIG. 1 DIMENSIONS FOR GUIDE FORK



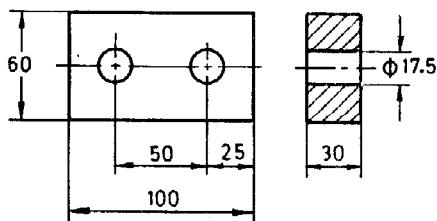
All dimensions in millimetres.

FIG. 2 DIMENSIONS FOR SPLINT PLATE



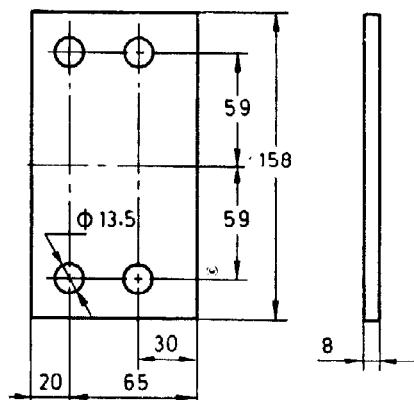
All dimensions in millimetres.

FIG. 3 DIMENSIONS FOR FILLERS



All dimensions in millimetres.

FIG. 4 DIMENSIONS FOR SHIM



All dimensions in millimetres.

FIG. 5 DIMENSIONS FOR LOCK PLATE

6. Material — Materials recommended for various components are given in col 5 of Table 1.

7. Designation — A rider for bucket for sinking operations in mines suitable for use with flat rope (Form A) with a guide rope spacing of 1 500 mm shall be designated as follows:

Rider for Sinking Bucket 1 500 A IS : 12527

7.1 Components of riders shall be designated as per their nomenclature given in col 2 of Table 1.

8. Other Requirements

8.1 A suitable limit switch shall be fixed to a bracket attached to the rider if required by the purchaser.

8.2 A suitable protective cover shall be provided with the rider if required by the purchaser.

9. Marking — The rider shall be marked with the manufacturer's name or his recognized identification mark and the guide rope spacings.

EXPLANATORY NOTE

In the preparation of this standard considerable assistance has been derived from DIN 21164-1980 'Shaft sinking—Riders for winding Kibbles', issued by Deutsches Institut für Normung (DIN).